UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,558	05/15/2007	Renato Caretta	07040.0273-00000	8208

22852 7590 09/24/2010

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
BELLINGER, JASON R	

ART UNIT	PAPER NUMBER
3617	

MAIL DATE	DELIVERY MODE
09/24/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,558	CARETTA ET AL.	
	Examiner	Art Unit	
	JASON R. BELLINGER	3617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *54-136* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *54-136* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the deformable closure member opening to "close" the port, as set forth in claims 54, 76, and 107, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 54, 76, and 107 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The limitation that the non-deformable closure member opens in response to pressure from the elastic element on the diaphragm, cap, and needle to *close* the port is not supported by the original specification or drawings. In fact, it appears that the valve operates in the one to one type relationship between the port and the non-deformable closure member (i.e. when the non-deformable closure member opens, the port opens). Therefore, it is unclear what is actually being claimed by this limitation in claims 54, 76, and 107.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 54-136, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rheinhardt in view of Vaughn and in further view of Alonso et al. Rheinhardt shows a wheel having an integral air tank 30, which includes compressed

air stored at a higher pressure than the pressure of air retained within the tire 10. A valve 40 communicates between the tank 30 and the interior of the tire 10 to allow pressurized air from the tank to flow into the tire 10 when the air pressure in the tire drops below a predetermined value. The tank 30 includes an inflation valve 20.

Rheinhardt also discloses that the valve 40 may function (i.e. open and close) in response to changes in air temperature. Rheinhardt, however, does not disclose the valve having an elastic element therein with an elastic constant that varies with temperature. Vaughn teaches the use of a valve including two concentrically arranged springs (7 and 20), wherein spring 7 is an elastic element responsive to temperature. Namely, the valve will open when the spring 7 responds to a decrease in temperature and vice versa (i.e. the elastic constant increases in response to decreasing temperature and vice versa). Spring 20 is external with respect to spring 7. The elastic element spring 7 is operatively associated with at least one non-deformable closure member 5 designed to open and close at least one port 2 in the valve. The valve further includes a diaphragm 16, a cap 12 and a needle 10. The elastic element 7 exerts pressure on the diaphragm 16 to bring cap 12 to contact needle 10, which causes the non-deformable closure member 5 to open the port 2. Therefore, from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the tire inflation system of Rheinhardt with the temperature responsive valve of Vaughn as a substitute equivalent valve structure, dependent upon availability, cost, and the desired factors in determining how the tire pressure is regulated.

Rheinhardt as modified by Vaughn does not disclose the elastic constant of the elastic element (spring 16 of Vaughn) varies within a temperature range of -50 to +50 degrees C. Alonso et al teaches the use of a valve 70 including an elastic element whose elastic constant varies within a temperature range of -1 to +49 degrees C. Therefore, from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the spring of the valve of Rheinhardt as modified by Vaughn from a material having the above properties, dependent on the desired operating range of the valve (i.e. the range of temperature over which the valve will control tire pressure regulation), dependent upon the environment, etc.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the value of the elastic constant of the spring measured at the low range differs from the value measured at the high range by at least 10% and no more than 40%. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the spring with elastic constant values suitable to prevent frequent opening and closing of the valve, thus preventing rapid changes in tire pressure.

Rheinhardt as modified by Vaughn and Alonso et al does not specify the ratio between the operating pressure of the tire and the tank being 0.1 to about 0.6, or that the pressure in the air tank is between 8-12 bars. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the relationship between the air tank and tire in such a way to optimize the size to weight ration of the wheel assembly with respect to tire pressure regulation capabilities.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the valve opens with the tire pressure drops by at least 5% with respect to the operating pressure. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange for the valve to open at any suitable pressure difference in order to reduce wear on the tire due to being under-inflated, and to prevent any handling issues with the vehicle due to under-inflated tires.

Rheinhardt as modified by Vaughn and Alonso et al does not specify that the second spring (20 of Vaughn) supports 60-95% of the load supported by the elastic element (i.e. both springs) as a whole or that the second spring has a substantially constant elastic constant over the temperature range. Vaughn is silent regarding the elastic constant of the second spring 20; however it is clear by the disclosure of Vaughn that only the first spring 16 has a variable elastic constant over a temperature range. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the second spring 20 of Vaughn would have a substantially constant elastic constant over the same temperature range as the first spring 16.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the second spring 20 to support 60-95% of the load for the purpose of allowing the first spring to solely respond to temperature changes as opposed to a mix of temperature and load (or pressure) changes.

Response to Arguments

6. Applicant's arguments filed 7 July 2010 have been fully considered but they are not persuasive. Applicant argues that the references do not include a valve having a

diaphragm, cap, and needle, nor the interaction of said elements with a non-deformable closure member to open a port in the valve. First, as set forth in section 3 above, the amendments to independent claims 54, 76, and 107 do not appear to be supported by the original specification nor drawings. Second, reconsideration of the Vaughn reference has revealed that the valve taught by Vaughn appears to act in the same manner as the disclosed valve.

It appears that the Applicant argues that no motivation was given to combine the references. However, this is not the case, given the fact that concise reasons for combining the references were provided in the rejections (from both the previous and current office actions).

It further appears that the Applicant argues that the Alonso reference does not show the claimed valve structure. However, the Alonso reference was only used to teach the values of an elastic constant of a valve element. Vaughn teaches the use of a valve having the claimed structure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON R. BELLINGER whose telephone number is (571)272-6680. The examiner can normally be reached on Mon - Thurs (9:00-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Morano can be reached on 571-272-6684. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason R Bellinger/
Primary Examiner
Art Unit 3617